

REMARKS

Applicant respectfully requests reconsideration and allowance of subject application. Claim 51 is amended and claims 23-32, 54, and 65-68 are canceled. Claims 1-22, 33-53, 55-64, and 69-84 are pending.

Applicant thanks the Examiner for the detailed analysis presented in this Office Action.

Claim Rejection under 35 U.S.C. § 102

Claims 1-84 stand rejected under 35 U.S.C. § 102 as being anticipated by Chen (hereinafter, "Chen"). Applicant respectfully traverses the rejection.

The subject application describes a computer-aided writing system that offers assistance to a user writing in a non-native language, as the user needs help, without requiring the user to divert attention away from the entry task. The writing system provides a user interface (UI) that integrates writing assistance with normal text entry. The writing system provides assistance to users who are having difficulty spelling a non-native word or selecting the appropriate word for a given context. The writing system also provides sample sentence structures to demonstrate how words are used and how sentences are properly crafted.

In the described implementation, the writing system is implemented as a writing wizard for a word-processing program. The writing wizard is exposed via a graphical UI that allows the user to enter words in a non-native language. When the user is unsure of a word's spelling or whether the word is appropriate, the user may enter a corresponding native word directly in line with the ongoing sentence.

An error tolerant spelling tool accepts the native word (even if it is misspelled or mistyped) and attempts to derive the most probable non-native word

1 for the given context. The spelling tool utilizes a bilingual dictionary to determine
2 possible non-native word translation candidates. These candidates are passed to a
3 non-native language model (e.g., a trigram language model) and a translation
4 model. The non-native language model generates probabilities associated with the
5 candidates given the current sentence or phrase context. The translation model
6 generates probabilities of how likely a native word is intended given the non-
7 native word candidates. From these probabilities, the spelling tool determines the
8 most probable non-native word translation. The writing wizard substitutes the
9 non-native word for the native input string. To the user, the substitution takes
10 place almost immediately after entering the native input string.

11 If the user likes the non-native word, the user may simply continue with the
12 sentence. On the other hand, if the user is still unsure of the non-native word, the
13 user can invoke more assistance from the writing wizard. For instance, the writing
14 wizard has a sentence recommendation tool that allows the user to see the non-
15 native word in a sentence context to learn how the word can be used. A window
16 containing example bilingual sentence pairs is presented to the user so that the
17 user can learn how the non-native word is used in the sentence and see the
18 corresponding sentence written in the native language. In addition, the wizard can
19 present a list of other native word translations of the input string, as well as a list
20 of other non-native word candidates. The user can select any one of these words
21 and review the selected word in a sample pair of bilingual sentences. In this
22 manner, the spelling tool and sentence recommendation tool work together in a
23 unified way to greatly improve the productivity of writing in a non-native
24 language.

25 These aspects are recited in the various claims.

1 **Claim 1** defines a method comprising:

2
3 receiving non-native words of a non-native language and at least
4 one native word of a native language that are entered by a user; and
5 converting the native word to a corresponding non-native word.
6

7 Figs. 5 and 6 in the subject application illustrate one exemplary
8 embodiment of this method. In Fig. 5, the user has entered two non-native words
9 *EW₁* and *EW₂*, such as English Words, that has been input and displayed in the UI.
10 When the user is uncertain how to spell the next non-native word, the user simply
11 enters the corresponding word in his/her native language. In this example, the
12 Chinese user enters Chinese Pinyin character *PY* at position 510 in the same entry
13 area 502. The Chinese user enters Pinyin rather than Chinese words (e.g., Hanzi
14 characters) because Pinyin can be conveniently entered using a standard
15 QWERTY keyboard or voice recognition system. Pinyin is an example of
16 phonetic text and Hanzi is an example of language text.
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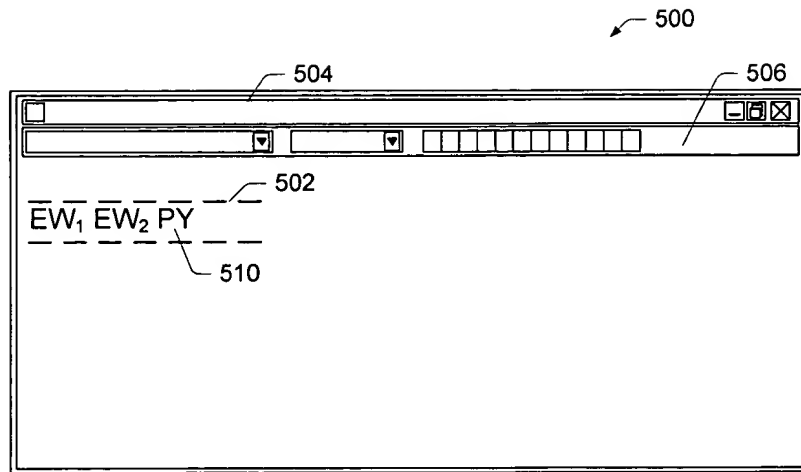


Fig. 5

Fig. 6 shows an example GUI 600 that corresponds to Fig. 5. The GUI 600 shows two English words 602 (e.g., “I have”) followed by a Pinyin string 604 (e.g., “wancheng”).

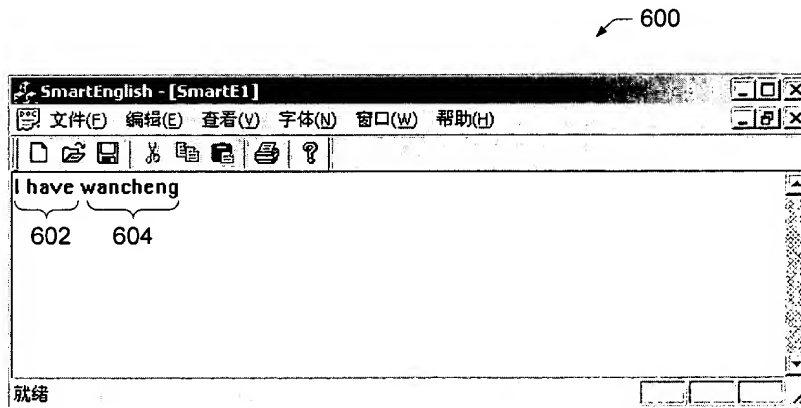


Fig. 6

After entering the native word (e.g., Pinyin) and pressing the “SPACE” key (or some other actuation), the cross-language wizard 136 automatically recognizes

1 that the current input is a native word and not a non-native word. The spelling
2 tool 202 converts the native word to a corresponding non-native word. If the
3 native word is slightly misspelled or entered incorrectly, the spelling tool tolerates
4 the errors and returns the most probable non-native word. The non-native word is
5 then depicted in the in-line entry area 502 in place of the native word.

6 Chen does not disclose the method of claim 1. Chen is silent as to
7 “receiving non-native words of a non-native language and at least one native word
8 of a native language that are entered by a user” and “converting the native word to
9 a corresponding non-native word.”

10 Chen discloses receiving Pinyin text and converting it to Hanzi. Chen also
11 notes that the Pinyin could be converted into other languages, such as English,
12 instead of Hanzi. (*Chen*, column 6, lines 36-39). Chen thus describes a UI similar
13 to many language converter that allows a user to write in native language and then
14 converts the words written in the native language to either another form (e.g.,
15 Pinyin to Hanzi) or another language (e.g., Pinyin to English).

16 Chen is not directed to aiding a user to write in a non-native language, and
17 hence does not disclose certain aspects of the claims. For instance, Chen does not
18 disclose receiving both native words (e.g., Pinyin) and non-native words (e.g.,
19 something other than Pinyin or Chinese-based words, such as English words) and
20 converting the native words (e.g., Pinyin) into corresponding non-native words
21 (e.g., English). Instead, Chen merely describes receiving a single type of word
22 and converting that to another single type of word. Under Chen, a native word in
23 one form is converted to another form of that native word (e.g., Pinyin to Hanzi)
24 or a native word is converted to a non-native word (e.g., Pinyin to English).

1 Nowhere does Chen disclose receiving a mixture of non-native and native words
2 and converting the native word to non-native words.

3 For this reason, claim 1 is allowable over Chen.

4 The Office argues that Chen discloses this method at column 6, lines 26-39.
5 (*Office Action*, page 2). Applicant disagrees. This excerpt merely describes that
6 Chen's UI 1020 receives Pinyin text as an input and converts that Pinyin text to
7 Hanzi characters. While Chen notes that "the system 1000 can convert the entered
8 Pinyin, coded or marked with diacritics, 1022 into other languages, like English,"
9 this does not capture the claimed subject matter in claim 1. Chen merely discloses
10 conversion of one word form (Pinyin) to another (Hanzi or English). Chen is
11 entirely silent as to receiving both "non-native words of a non-native language and
12 at least one native word of a native language that are entered by a user" and
13 "converting the native word to a corresponding non-native word."

14 Applicant notes that Chen discloses entry of mixed language (i.e., non-
15 native English with native Chinese text), but there is no conversion of the native
16 into non-native or vice versa. (*Chen*, column 7, lines 5-15). Rather, the English
17 word simply expresses something well known and understood by the native user
18 and that need not or cannot be expressed in the native language. Examples of such
19 English words might be cities, company names, product names, etc. For instance,
20 the input may be Chinese text to say "I live in" followed by the English word
21 "Boston Francisco". Boston is understood to the Chinese user, and need not be
22 translated.

23 For the above reasons, Chen does not disclose "receiving non-native words
24 of a non-native language and at least one native word of a native language that are
25 entered by a user" and "converting the native word to a corresponding non-native

1 word” as recited in claim 1. Thus, claim 1 is patentable over Chen and Applicant
2 respectfully requests that the § 102 rejection be withdrawn.

3 **Claims 2-17** depend from claim 1 and are allowable by virtue of this
4 dependency. These claims further recite features not described in Chen.

5 For instance, **claim 5** recites “displaying the non-native words and the
6 native word within a common entry line.” As shown above in Fig. 5, for example,
7 the non-native English words EW and the Pinyin words PY to be converted to
8 English are displayed within a common entry line 502. Chen does not show this
9 feature. In fact, Chen specifically discloses something quite different. Chen
10 discloses that the input text (e.g., Pinyin) is displayed in a first, or lower, section
11 1021 of the UI 1020 and the converted text (e.g., Hanzi) is displayed in the
12 second, or upper, section 1024 of the UI 1020. This requires the user to divert his
13 or her eyes from input to output, a problem Applicant sought to overcome. For
14 this additional reason, claim 5 is patentable over Chen.

15 **Claim 7** recites that the native word is entered in phonetic form (e.g.,
16 Pinyin), and that the converting further comprises “translating the native word
17 from the phonetic form to a language form” (e.g., Pinyin to Hanzi) and
18 “translating the native word in the language form to the non-native word” (e.g.,
19 Hanzi to English). Chen is silent as to this two step conversion. Chen merely
20 discloses one conversion of Pinyin to Hanzi or English.

21 In support of the rejection, the Office points to column 7, lines 5-24.
22 (*Office Action*, page 3). However, this excerpt describes in part that an English
23 word may be included in the entry text (i.e., akin to the Boston example above).
24 The excerpt further discusses that the Pinyin input may be parsed in words and
25 sentences. Nowhere in this excerpt is there any disclosure of the two step

1 conversion recited in claim 7. For this additional reason, claim 7 is patentable
2 over Chen.

3 **Claim 13** benefits from the same arguments presented for claim 7.

4 Remaining claims 18-84 are summarily rejected for reasons similarly given
5 for claims 1-17. These claims therefore benefit from the arguments advanced
6 above with respect to claims 1-17. Applicant further notes that these claims recite
7 different combinations of elements that are not disclosed by Chen. Additionally,
8 some claims recite features not found in claims 1-17 and thus, have not been
9 addressed by the Office as to how Chen is being applied to them. Examples of
10 such features will be identified below.

11 **Claims 18-22** benefit from the above arguments and are considered
12 allowable over Chen.

13 **Claims 23-32** are canceled without prejudice, thereby rendering moot the
14 rejection thereto.

15 **Claim 33** recites:

16
17 receiving non-native words of a non-native language and at least
18 one native word of a native language, the native word being received
19 in a first form of the native language;

20 translating the native word from its first form to at least one
21 native word of a second form;

22 translating the native word of the second form to at least one
23 non-native word.
24
25

1 For the reasons given above with respect to claims 1 and 7, Chen fails to
2 disclose this method. Thus, claim 33 and dependent claims 34-41 are in condition
3 for allowance.

4 **Claim 42** recites a detailed method comprising many features not shown by
5 Chen. Claim 42 recites:

6
7 enabling a user to enter non-native words of a non-native
8 language and a phonetic text string of a native language;

9 displaying the non-native words and the phonetic text string
10 within a common entry line;

11 translating the phonetic text string to at least one native word of
12 the native language;

13 determining possible non-native word candidates from the
14 native word of the native language;

15 generating first probabilities associated with the non-native
16 word candidates that indicate how likely individual non-native word
17 candidates were intended by the user given the context established
18 by previously entered non-native words;

19 generating second probabilities associated with the non-native
20 word candidates that indicate how likely the native word was
21 intended given individual non-native word candidates;

22 deriving a most probable non-native word from among the non-
23 native word candidates based on the first and second probabilities;
24 and
25

1 translating the native word to the most probable non-native
2 word.

3
4 Chen does not disclose this method, including the “translating the phonetic
5 text string to at least one native word of the native language” and generating the
6 “first probabilities” and “second probabilities”, and “deriving a most probable
7 non-native word from among the non-native word candidates based on the first
8 and second probabilities.” Applicant respectfully requests that the §102 rejection
9 of claim 42, and dependent claims 43-50, be withdrawn.

10 **Claim 51** is amended to include the limitations of claim 54 (now canceled).
11 As amended, claim 51 distinguishes over the situation where an English word
12 might be included in a Chinese string, akin to the example given above regarding
13 Boston. As amended, claim 51 recites a cross-language input user interface
14 comprising:

15
16 a line-based entry area;
17 non-native text displayed within the line-based entry area;
18 native text displayed together with the non-native text within the
19 line-based entry area; and
20 converted non-native text, converted from the native text,
21 substituted for the native text within the line-based entry area.
22

23 Chen does not disclose this UI feature where native text is displayed
24 together with the non-native text within the line-based entry area and then
25 subsequently converted non-native text, converted from the native text, is

1 substituted for the native text within the line-based entry area. Accordingly, claim
2 51, and dependent claims 52-53 and 55-59, are allowable over Chen.

3 **Claim 60** recites a cross-language input user interface comprising “an entry
4 area that accepts first words written in a first language and at least one second
5 word written in a second language” and “a candidate list of first words that are
6 possible translations from the second word.” Chen does not disclose this UI.
7 While Chen shows that entry of a mixture of Pinyin and English is possible for
8 purposes of allowing entry of well known English words (e.g., Boston or company
9 names like NIKE) that will not be converted, Chen does not then display a
10 candidate list of possible translations for translating the English or Pinyin words
11 into the other form.

12 **Claims 65-68** are canceled without prejudice, thereby rendering moot the
13 rejection thereto.

14 **Claim 69** defines a cross-language writing architecture comprising “a user
15 interface to enable a user, who is accustomed to a native language, to enter non-
16 native words from a non-native language” and “a spelling tool to assist the user
17 with correct entry of the non-native words.” Chen does not disclose this
18 architecture. In particular, Chen fails to show the UI for entering non-native
19 words and a spelling tool to assist with such entry. Chen’s UI helps a user enter
20 native words and convert them to a different form or to non-native words.

21 It is noted that the Office does not address the spelling tool feature, as it
22 was not recited in early claims 1-17, upon which subsequent rejections were
23 based. For these reasons, Applicant requests withdrawal of the rejection of claim
24 69 and dependent claims 70-75.
25

1 **Claim 76** defines a cross-language writing architecture comprising “a user
2 interface to enable a user, who is accustomed to a native language, to enter non-
3 native words from a non-native language” and “a sentence recommendation tool to
4 suggest possible sentence structures in the non-native language.” Similar to claim
5 69, Chen does not disclose a UI for entering non-native words and a sentence
6 recommendation tool. Chen’s UI helps a user enter native words and convert them
7 to non-native words. Further, the Office does not address how Chen discloses the
8 sentence recommendation tool feature, as it was not recited in early claims 1-17,
9 upon which subsequent rejections were based. For these reasons, Applicant
10 requests withdrawal of the rejection of claim 76 and dependent claims 77-79.

11 **Claims 80-83** benefit from the arguments above with respect to claims 69
12 and 76, and hence are in condition for allowance.

13 **Claim 84** recites, in part, “enable entry of English words and Chinese
14 Pinyin”, “translate the Chinese Pinyin to at least one Chinese word” and
15 “determine possible English word candidates from the Chinese word.” This set of
16 acts is not disclosed by Chen. Chen is merely concerned with one conversion
17 form Pinyin to either Hanzi or English.

18 Claim 84 further requires “generate first probabilities associated with the
19 English word candidates that indicate how likely each of the English word
20 candidates was intended given previously entered English words” and “generate
21 second probabilities associated with the English word candidates that indicate how
22 likely the Chinese word was intended given each of the English word candidates”,
23 and “derive a most probable English word from among the English word
24 candidates based on the first and second probabilities”. Chen fails to disclose this
25

1 set of acts involving two sets of probabilities. Further, the Office does not address
2 these features.

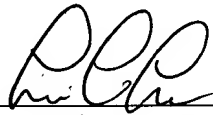
3 Applicant respectfully requests that the §102 rejection of claim 84 be
4 withdrawn.

5
6 **Conclusion**

7 Claims 1-22, 33-53, 55-64, and 69-84 are in condition for allowance.
8 Applicant respectfully requests prompt allowance of the subject application. If
9 any issue remains unresolved that would prevent allowance of this case, **the**
10 **Examiner is requested to urgently contact the undersigned attorney to resolve**
11 **the issue.**

12
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14 Date: Dec. 15, 2004

Respectfully Submitted,

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